AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1. (Currently amended) A computer-implemented method for identifying ~~hidden~~ occluded and visible surfaces on an n-dimensional object, wherein n is greater than 1, said method comprising:

generating an n-dimensional image of an object, said image including a first plurality of n-dimensional components that define a shape and orientation of the image and a plurality of parts located inside the image;

superimposing an n-dimensional grid of pixels on said image, said pixels arranged in a lattice structure such that each pixel of said grid corresponds to one of a plurality of vertices of an m-sided cell, wherein each side of said m-sided cell includes at least four vertices; ~~and~~

identifying a second plurality of n-dimensional components located on an outer perimeter of said image that abut or overlap at least one side of one m-sided cell in said grid; and

identifying at least one occluded portion of the image based on the identified second plurality of n-dimensional components.

2. (Original) The method of claim 1, wherein m is two times n.

3. (Original) The method of claim 1, further including the step of rendering an n-dimensional image including the second plurality of n-dimensional components and excluding the at least one occluded portion.

4. (Currently amended) A computer-implemented ~~The~~ method ~~of claim 1~~ for identifying hidden and visible surfaces on an n-dimensional object, wherein n is greater than 1, said method comprising:

generating an n-dimensional image of an object, said image including a first plurality of n-dimensional components that define a shape and orientation of the image and a plurality of parts located inside the image;

superimposing an n-dimensional grid of pixels on said image, said pixels arranged in a lattice structure such that each pixel of said grid corresponds to one of a plurality of vertices of an m-sided cell, wherein each side of said m-sided cell includes at least four vertices; and

identifying a second plurality of n-dimensional components located on an outer perimeter of said image that abut or overlap at least one side of one m-sided cell in said grid, wherein said identifying ~~further~~ includes:

starting at a predetermined location inside the grid and outside the image;

identifying a set of vertices corresponding to the sides of an untested m-sided cell;

testing each side of the untested cell to determine when an n-dimensional component abuts or overlaps at least one side of the m-sided cell;

storing an identifier of an n-dimensional component when the n-dimensional component abuts or overlaps at least one side of said m-sided cell; and

repeating the identifying, testing, and storing steps for every m-sided cell located inside the grid, excluding cells inside the image.

5. (Original) The method of claim 1, wherein said identifying further includes:

identifying a location where the image abuts or overlaps at least one side of an m-sided cell;

storing an identifier of each n-dimensional component in the image associated with the location; and

repeating the identifying, testing, and storing steps for every location where the image abuts or overlaps at least one side of an m-sided cell.

6. (Original) The method of claim 4, wherein said storing further includes:

identifying a plurality of m-sided cells adjacent to said m-sided cell when the n-dimensional component does not abut or overlap at least one side of said m-sided cell; and

for each of said plurality of adjacent m-sided cells, storing an identifier of an n-dimensional component when the n-dimensional component abuts or overlaps at least one side of said adjacent m-sided cells.

7. (Original) The method of claim 1, wherein spacing between successive pixels is a user inputted value.

8. (Original) The method of claim 1, wherein said n-dimensional grid is comprised of a plurality of m-sided cells.

9. (Original) The method of claim 8, wherein an outer boundary of said grid is separated from the outer perimeter of said image by at least one row of m-sided cells.

10. (Currently amended) An apparatus for identifying ~~hidden~~ occluded and visible surfaces on an n-dimensional object, wherein n is greater than 1, said apparatus comprising:

a network device having a memory containing a program that further includes:

a module for generating an n-dimensional image of an object, said image including a first plurality of n-dimensional components that define a shape and orientation of the image and a plurality of parts located inside the image;

a module for superimposing an n-dimensional grid of pixels on said image, said pixels arranged in a lattice structure such that each pixel of said grid corresponds to one of a plurality of vertices of an m-sided cell, wherein each side of said m-sided cell includes of at least four vertices; ~~and~~

a module for identifying a second plurality of n-dimensional components located on an outer perimeter of said image that abut or overlap at least one side of one m-sided cell in said grid; and

a module identifying at least one occluded portion of the image based on the identified second plurality of n-dimensional components.

11. (Original) The apparatus of claim 10, wherein m is two times n.

12. (Currently amended) The apparatus of claim 10, further including a module for rendering an n-dimensional image including the second plurality of n-dimensional components and excluding the at least one occluded portion.

13. (Currently amended) An ~~The~~ apparatus ~~of claim 10~~ for identifying hidden and visible surfaces on an n-dimensional object, wherein n is greater than 1, said apparatus comprising:

a network device having a memory containing a program that further includes:

a module for generating an n-dimensional image of an object, said image including a first plurality of n-dimensional components that define a shape and orientation of the image and a plurality of parts located inside the image;

a module for superimposing an n-dimensional grid of pixels on said image, said pixels arranged in a lattice structure such that each pixel of said grid corresponds to one of a plurality of vertices of an m-sided cell, wherein each side of said m-sided cell includes of at least four vertices; and

a module for identifying a second plurality of n-dimensional components located on an outer perimeter of said image that abut or overlap at least one side of one m-sided cell in said grid, wherein said module for identifying further includes the capability to:

start at a predetermined location inside the grid and outside the image;

identify a set of vertices corresponding to the sides of an untested m-sided cell;

test each side of the untested cell to determine when an n-dimensional component abuts or overlaps at least one side of said m-sided cell;

store an identifier of an n-dimensional component when the n-dimensional component abuts or overlaps at least one side of said m-sided cell; and

repeat the identifying, testing and storing steps for every m-sided cell located inside the grid, excluding cells inside the image.

14. (Original) The apparatus of claim 10, wherein said module for identifying further includes the capability to:

identify a location where the image abuts or overlaps at least one side of an m-sided cell;

store an identifier of each n-dimensional component in the image associated with the location; and

repeat the identifying and storing steps for every location where the image abuts or overlaps at least one side of an m-sided cell.

15. (Original) The apparatus of claim 13, wherein said module for storing further includes the capability to:

identify a plurality of m-sided cells adjacent to said m-sided cell when the n-dimensional component does not abut or overlap at least one side of said m-sided cell;

for each of said plurality of adjacent m-sided cells, store an identifier of an n-dimensional component when the n-dimensional component abuts or overlaps at least one side of said adjacent m-sided cells.

16. (Original) The apparatus of claim 10, further including the capability for a user to modify spacing between successive pixels.

17. (Original) The apparatus of claim 10, wherein said n-dimensional grid includes a plurality of m-sided cells.

18. (Original) The apparatus of claim 17, wherein an outer boundary of said grid is separated from the outer perimeter of said image by at least one row of m-sided cells.

19. (Currently amended) A machine-readable storage medium having stored thereon machine executable instructions, the execution of said instructions adapted to implement a method for identifying hidden and visible surfaces on an n-dimensional object, wherein n is greater than 1, said method comprising:

generating an n-dimensional image of an object, said image including a first plurality of n-dimensional components that define a shape and orientation of the image and a plurality of parts located inside the image;

superimposing an n-dimensional grid of pixels on said image, said pixels arranged in a lattice structure such that each pixel of said grid corresponds to one of a plurality of vertices in an m-sided cell, wherein each side of said m-sided cell includes at least four vertices; ~~and~~

identifying a second plurality of n-dimensional components located on an outer perimeter of said image that abut or overlap at least one side of one m-sided cell in said grid; and

identifying at least one hidden portion of the image based on the identified second plurality of n-dimensional components.

20. (Original) The machine-readable storage medium of claim 19, wherein m is two times n.

21. (Currently amended) The machine-readable storage medium of claim 19, further including the step of rendering an n-dimensional image of the second plurality of n-dimensional components, excluding the at least one hidden portion.

22. (Currently amended) A ~~The~~ machine-readable storage medium ~~of claim 19~~ having stored thereon machine executable instructions, the execution of said instructions adapted to implement a method for identifying hidden and visible surfaces on an n-dimensional object, wherein n is greater than 1, said method comprising:

generating an n-dimensional image of an object, said image including a first plurality of n-dimensional components that define a shape and orientation of the image and a plurality of parts located inside the image;

superimposing an n-dimensional grid of pixels on said image, said pixels arranged in a lattice structure such that each pixel of said grid corresponds to one of a plurality of vertices in an m-sided cell, wherein each side of said m-sided cell includes at least four vertices; and

identifying a second plurality of n-dimensional components located on an outer perimeter of said image that abut or overlap at least one side of one m-sided cell in said grid, wherein said identifying ~~further~~ includes:

starting at a predetermined location inside the grid and outside the image;

identifying a set of vertices corresponding to the sides of an untested m-sided cell;

testing each side of the untested cell to determine whether an n-dimensional component abuts or overlaps at least one side of said m-sided cell;

storing an identifier of an n-dimensional component when the n-dimensional component abuts or overlaps at least one side of said m-sided cell; and

repeating the identifying, testing and storing steps for every m-sided cell located inside the grid, excluding cells inside the image.

23. (Original) The machine-readable storage medium of claim 19, wherein said identifying further includes:

identifying a location where the image abuts or overlaps at least one side of an m-sided cell;

storing an identifier of each n-dimensional component in the image associated with the location; and

repeating the identifying and storing steps for every location where the image abuts or overlaps at least one side of an m-sided cell.

24. (Original) The machine-readable storage medium of claim 22, wherein said storing further includes:

identifying a plurality of m-sided cells adjacent to said m-sided cell when the n-dimensional component does not abut or overlap at least one side of said m-sided cell; and

for each of said plurality of adjacent m-sided cells, storing an identifier of an n-dimensional component when the n-dimensional component abuts or overlaps at least one side of said adjacent m-sided cells.

25. (Previously presented) The machine-readable storage medium of claim 19, wherein spacing between successive pixels is a user inputted value.

26. (Original) The machine-readable storage medium of claim 19, wherein said n-dimensional grid includes a plurality of m-sided cells.

27. (Original) The machine-readable storage medium of claim 26, wherein an outer boundary of said grid is separated from the outer perimeter of said image by at least one row of m-sided cells.